

ATTORNEY DOCKET NO. 01-P-002 (STMI01-00013)
U.S. SERIAL NO. 09/871,463
PATENT

PENDING CLAIMS:

Please amend the claims as follows, substituting any amended claim(s) for the corresponding pending claim(s):

1 1. (withdrawn) A method of forming a conductive structure within an integrated circuit
2 comprising:

3 forming a conformal tungsten layer over a dielectric layer and within openings within
4 the dielectric layer;

5 forming a protective barrier layer over the tungsten layer, wherein the protective barrier
6 layer comprises a material for which removal by chemical mechanical polishing is primarily
7 mechanical; and

8 removing at least portions of the protective barrier layer and the tungsten layer by
9 chemical mechanical polishing.

1 2. (withdrawn) The method as set forth in Claim 1 wherein the step of forming a protective
2 barrier layer over the tungsten layer further comprises:

3 forming a titanium or titanium nitride layer on the tungsten layer.

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1 3. (withdrawn) The method as set forth in Claim 2 wherein the step of removing at least
2 portions of the protective barrier layer and the tungsten layer by chemical mechanical polishing
3 further comprises:

4 removing portions of the tungsten layer overlying the dielectric layer without removing
5 portions of the tungsten layer within the openings within the dielectric layer.

1 4. (withdrawn) The method as set forth in Claim 3 wherein the step of removing at least
2 portions of the protective barrier layer and the tungsten layer by chemical mechanical polishing
3 further comprises:

4 removing all of the protective barrier layer.

1 5. (withdrawn) The method as set forth in Claim 3 wherein the step of removing at least
2 portions of the protective barrier layer and the tungsten layer by chemical mechanical polishing
3 further comprises:

4 removing portions of the protective barrier layer overlying dielectric regions between
5 the openings within the dielectric layer.

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1 6. (withdrawn) The method as set forth in Claim 5 wherein the step of removing at least
2 portions of the protective barrier layer and the tungsten layer by chemical mechanical polishing
3 further comprises:

4 after removing portions of the protective barrier layer overlying the dielectric regions
5 between the openings within the dielectric layer, removing portions of the tungsten layer
6 overlying the dielectric regions between the openings within the dielectric layer; and

7 during removal of portions of the tungsten layer overlying the dielectric regions between
8 the openings within the dielectric layer, removing portions of the protective barrier layer
9 overlying the openings within the dielectric layer.

1 7. (withdrawn) The method as set forth in Claim 2 wherein the step of removing at least
2 portions of the protective barrier layer and the tungsten layer by chemical mechanical polishing
3 further comprises:

4 removing portions of the protective barrier layer and the tungsten layer overlying
5 dielectric regions between the openings within the dielectric layer to planarize remaining
6 portions of the tungsten layer and remaining portions of the protective barrier layer, if any, with
7 the dielectric layer.

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- 1 8. (previously amended) A portion of an integrated circuit structure comprising:
 - 2 a dielectric layer over a substrate;
 - 3 a conformal tungsten layer over the dielectric layer and within openings within the dielectric layer; and
 - 5 a protective barrier layer over the tungsten layer and within the openings, wherein the protective barrier layer comprises a material for which removal by chemical mechanical polishing is primarily mechanical.

- 1 9. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 8 wherein the protective barrier layer is titanium or titanium nitride.

- 1 10. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 8 wherein portions of the tungsten layer within the openings are thicker than portions of the tungsten layer over the dielectric layer.

- 1 11. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 8 wherein the protective barrier layer overlies the entire tungsten layer.

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1 12. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 8
2 wherein the protective barrier layer overlies portions of the tungsten layer within the openings
3 but not portions of the tungsten layer over the dielectric layer.

1 13. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 8
2 wherein the tungsten layer has a thickness of between about 4500 and 8000 angstroms.

1 14. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 8
2 wherein the protective barrier layer has a thickness of between about 100 and 800 angstroms.

1 15. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 8
2 wherein at least one opening within the dielectric layer is sized to form a capacitive electrode
3 from tungsten within the at least one opening.

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- 1 16. (previously amended) A portion of an integrated circuit structure comprising:
 - 2 a dielectric layer having an opening therein;
 - 3 tungsten within the opening; and
 - 4 a portion of a protective barrier layer over a central region of the tungsten and within the opening, wherein the portion of the protective barrier layer comprises a material for which
 - 5 removal by chemical mechanical polishing is primarily mechanical.
- 1 17. (currently amended) The portion of an integrated circuit structure as set forth in Claim 16
2 wherein an upper surface of the tungsten is exposed around the portion of the protective barrier
3 layer.
- 1 18. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 16
2 wherein the portion of the protective barrier layer is titanium or titanium nitride.
- 1 19. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 16
2 wherein the tungsten and the portion of the protective barrier layer form an upper surface which
3 is substantially planar with an upper surface of the dielectric layer.

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- 1 20. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 16
- 2 wherein the opening within the dielectric layer is sized to form a capacitive electrode from the
- 3 tungsten within the opening.